“Clustering as a new growth strategy for regional economies? A discussion of new forms of regional industrial policy in the UK.”


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**Introduction**

Over the last decade, regions such as Scotland, Wales, Northern Ireland, and the North East of England have provided examples of successful economic developments in sectors such as automotive manufacturing, electronics, chemicals and some more traditional sectors such as food & drink, clothing and textiles. To a large extent, this success has been built on the attraction of foreign direct investors, combined with efforts to improve the local supply base and to foster linkages between local suppliers and foreign investors. In recent years, a trend can be observed towards more interest in skill development and the support of the ‘indigenous’ sector, with more attention on non-manufacturing sectors such as multimedia and professional services. Against this background, cluster initiatives have emerged both as part of the desire to improve the benefits from foreign investments by supporting supply chains and other forms of inter-firm relationships, and to support networking among local firms, particularly SMEs.

This paper will focus on the cluster strategies and initiatives developed in the different British regions, and will discuss how those institutions have modified regional industrial policy. Attention will be paid to the wider institutional context in which new policies have emerged, and the extent to which they reflect a move away from attracting foreign investment towards a more endogenous, innovation-oriented approach. Nevertheless, a key premise of the paper is that the development of peripheral regions remains closely tied to their potential to capture foreign assets, whether in the form of production facilities or via direct technology transfer. In particular the relationship between the cluster approach and the concept of systems of innovation needs to be addressed from the perspective of the position of regions in wider chains of production and knowledge transfer. The discussion is structured in five sections. The first section will introduce the cluster approach and its relation with the innovation system concept. The next two sections will highlight the political context in which cluster policies have emerged, followed by a discussion of the role of Regional Development Agencies. The fourth section will present the regional case studies, followed by the conclusion.

**From innovation systems to clustering: the development context for peripheral regions**

**Conceptual Issues**

Recent thinking and research on innovation has provided an important contribution to the understanding of the economic success of particular territories, such as nations or
regions. The literature on innovation systems has underpinned two essential dimensions of innovation (Morgan, 1997): first, the role of systemic interaction between different agents in the innovation chain, particularly between producers and users of intermediate goods (Lundvall, 1992), and between business and the wider research community; and second, the fact that innovation processes are institutionally shaped. Different set-ups of institutions, with between them particular processes of networking will develop different kinds of capabilities in advancing technological development and its commercialisation. Against this background, the concept of systems of innovation seems to present a framework of conceptual thinking and analytical research, based on a strong inter-disciplinary approach, rather than a full-blown theory (Edquist, 1997). One of the great challenges the systems of innovations approach is still facing, as shown through this volume, is how it can bring together the underlying dimensions of technological, institutional and economic change, and how this can related to conventional economic concepts which justify policy intervention, notably systemic and market failures. Moreover, the role of the geographical dimension is far from resolved. While the national dimension provided the starting point, inspired by the success of particular nations such as Germany and Japan, recent work on particular territories as well as the role of transnational firms and systems has shifted the attention to the level of regions, continental blocs and the global system (Edquist, 1997). Not only is there a question of which level is most pertinent, but also how different levels interact.

The latter issue is of particular interest in the case of more peripheral regions with a strong presence of foreign capital, and invokes the question of how externally owned capital may fit in a concept of innovation at a regional level. An intriguing debate has emerged around the role of multinational corporations in technology development. Porter’s ‘home base’ argument, which stated that it is the home base that determines most of the technological competence of multinational firms as well as receives most of the benefits, was challenged by authors like Dunning and Cantwell. The latter showed that in both host and home areas, various forms of interaction between firms and the environment determined the firm’s technology potential as well as, depending on the specific strategies of the firms and the geographical context, its overall territorial impact. Cantwell (1991) provides evidence showing that the specific geographical structure of multi-plant firms is an important determinant of their innovative capabilities. In particular, although specific R&D functions may be concentrated in a few places; their presence in different areas allows them to tap into different areas of knowledge, or to apply their knowledge in different environments. Dunning (1992), elaborating on his seminal ideas relating the emergence of the multinational enterprise to the existence of imperfections especially in factor markets, suggests that multinational firms through various forms of common governance may play an important role in the development of particular industrial agglomerations. In his recent work, Dunning shows that vital resources and capabilities are increasingly controlled by multinational enterprises and that, particularly in recent decades, governments have been competing intensively for these resources (Dunning 1991, 1992). A different view is taken by Mowery (1995), who sees as the core component of innovation systems the ‘absorptive capacity’ rather than the generation of new knowledge, and he emphasises competition as an important factor force to increase this capacity.
Other scholars have emphasised the localised character of innovation, pointing at the revival of the phenomenon of industrial districts and the success stories of hi-tech regions such as Silicon Valley. Here a distinction can be made between authors who emphasise the role of networking in a particular socio-cultural context, as caught by the term of ‘innovative milieu’ (Camagni, 1991), and authors who have adopted a more institutional perspective, by developing the concept of ‘regional innovation systems’ (Cooke, 1992). In the innovative milieu concept, the growth of a locally embedded innovation system is seen as essential in shaping the social routines and strategies of actors in the regional economy. The institutional approach pays more attention to the development of and interaction between specific technology-oriented organisations, such as universities, research centres, and training organisations, and business. The differences between these two approaches should however not be overstated. They both share an emphasis on networking, the development of shared visions, and the building of trust. Indeed, in practical research, both approaches are often seen as complementary.

While an author like Dunning articulates the link between local developments and global organisations, this aspect is missing in most of the local innovation approaches. Advocates of the ‘innovative milieu’ and ‘industrial district’ concept have been accused of presenting a particular phenomenon observed in a small number of highly successful regional economies as a general case. They thus seemed to undervalue the fact that there were organisational forms, at other geographical levels, which could also embody innovative capabilities. Some authors have even tried to trivialise the role of large firms by arguing that, with respect to innovation, they behave almost as indigenous firms (Maskell 1996). Against this idea, authors like Gray and Markusen stress that the subsidiaries of multi-plant firms present a distinct organisational form, which, depending on the nature of their embedding in local as well wider networks, may act as vital hubs in regional economic development (Gray et al. 1996) (other hubs are also feasible, for instance regional universities). Moreover, critical analysts of localised innovation systems, including that of high-tech areas such as Silicon Valley, have argued that a large part of the knowledge underpinning the regions’ economic success was obtained from elsewhere, and that success was based on the organisational capability to apply knowledge to a commercial environment (Dupuy and Gilly, 1994).

For most regions and nations, the most important asset is to have a market system that is able to capture new forms of knowledge and apply them within the context of the local production system. Multinational firms can act as important vehicles of technology transfer, even if a plant established in a host area starts with only routine production activities. Whether the establishment of a subsidiary by a multinational firm brings genuine benefits to a host economy depends on whether there are adequate mechanisms for information exchange and trading, whether the right incentives exists for co-operation and dialogue between local and foreign actors, and whether the foreign players fit in the existing institutional system of economic development and technology transfer. Dunning (1992), partly as a response to Porter’s clustering concept, refers to two typical scenarios that can be followed by a foreign investor. One is the ‘easy pickings’ scenario, which is accompanied by poaching local workers, driving out local competitors and very low local purchasing level. This will occur particularly when the conditions of exchange do not hold and systematic failures
abound. Another is the ‘upgrading scenario’ which includes the creation of partnerships with local firms and institutions, aimed at improving the local skill base and support to the development of SMEs.

The ‘upgrading scenario’ should be seen as a two-edged sword. On the one hand, it provides the region with a vehicle to improve parts of the local economy. One way in which subsidiaries have been used, for instance, is as ‘model’ plants for local firm, through their role as a demanding customer, as learning sites for best practice in business processes, skill development etc. On the other hand, much of this upgrading has been directly beneficial for the foreign investor, serving its needs for better skills and suppliers. In many cases, the investments made by the subsidiary management and workers in the upgrading process have been matched by even higher investments (and subsidies) stemming from the local community and support channels in supporting ‘aftercare’ initiatives (Peck, 1996). To reach such a double beneficial scenario, however, it will be necessary to address informational and institutional failures within the regional system.

Several forms of ‘failure’ may be mentioned that can be characterised as government failure. The last two decades have witnessed a proliferation of business support targeted on improving the innovative capacity of the regional economy. Some of these initiatives were explicitly spatial measures (technology parks, incubator centres, etc); others involved non-spatial instruments covering a certain geographical area (technology advice and transfer centres, university knowledge extension centres, etc). However, in recent years, it has been recognised that many initiatives in the area of innovation were too much supply driven, failing to detect and adapt to the real needs of (potential) customers (Morgan 1997). Missing was a proper articulation of the needs of firms, particularly SMEs, from the perspective of a longer-term development strategy. It has also been argued that many initiatives operated too much in isolation, that they lacked linkages with other local institutions. Such institutional mismatches have been aggravated by short-term character of funding and frequent changes in technology policy driven by politics rather than business needs.

Against this background, cluster-based policies can play two fundamental roles for the development of more peripheral areas. On the one hand, a cluster approach may be adopted to increase the ‘absorptive potential’ of the regional economy, as well as to build a more strategic context in which local actors can work at the improvement of regional innovative capacities. A cluster policy, seen from this perspective, should provide an organisational framework that, through the notion of linking local businesses to central hubs, improves the embedding of firms in both local and global networks (Young, 1994). Such links can embody trade relations (local purchasing), but, perhaps more importantly, should also involve non-trade relations of information exchange encouraging a variety of inter-firm learning. On the long term, such interaction may also facilitate the alignment of activities and investments at the level of the regional economy, which may be the source of dynamic competitive advantages (Langlois and Robertson, 1995). On the other hand, a cluster policy, through structuring and integrating business support along sectoral and supply chain lines, may contribute to the effectiveness of business support. The essence here is to overcome substantial failures in government-based support provision and to address institutional mismatches in the policy and support system. Table 1. summarises the main justifications for cluster-
based regional policy, and also includes specific policy contribution which will be discussed in more detail below.

<table>
<thead>
<tr>
<th>General categories of systemic and market failures</th>
<th>Specific applicability to peripheral regions</th>
<th>Contribution of cluster-based policies</th>
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<tbody>
<tr>
<td>Informational failures</td>
<td>Often severe, due to poor market and information infrastructure and segmentation of the regional economy (e.g., foreign vs. local firms)</td>
<td>Facilitating networks involving local and foreign firms; supporting information exchange systems and business links brokering services</td>
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<td>Limited interaction between actors in innovation systems</td>
<td>Innovation systems poorly developed; in general, lacking co-ordination between key (public and private) actors in the regional economy</td>
<td>Improving regional facilitation of social networking and institutional links, notably through public-private partnerships targeting specific clusters</td>
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<tr>
<td>Institutional mismatches between (public) knowledge infrastructure and market needs</td>
<td>Proliferation of policy initiatives and support structures; co-ordination is however poor and lacking demand orientation</td>
<td>Rationalisation of support along cluster lines, e.g. through (real) service centres, university extension services.</td>
</tr>
<tr>
<td>Absence of demanding customers</td>
<td>Foreign plants may provide opportunities (also along non-trade lines) but they are often not sufficiently exploited</td>
<td>Creating strategies for the regional embedding of foreign plants.</td>
</tr>
<tr>
<td>Government failure</td>
<td>Affecting particularly the implementation of technology policy and provision of business support.</td>
<td>Improving the co-ordination of regional governance structure, e.g. through regional development policy with capacity to develop (top-down) cluster policies</td>
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</table>

Table 1. Cluster-related systemic and market failure applicable to more peripheral regions

**Dimensions of regional cluster policy**

While the concept of clusters has gained a prominent place in the discourse on economic development in policy at all spatial levels, the concept has been adopted primarily at the regional or subnational level. Both at the national and regional level supply-side oriented measures have been popular since the 1970s. However, it is at the regional level where a shift can be detected away from primarily infrastructure and technology oriented policies towards more comprehensive approaches based on clustering. Cluster strategies have been adopted for instance within several German Länder (primarily Nordrhein-Westphalen and Baden-Württemberg), many states in the USA, and many regions in Europe (Basque Country, Catalonia, Northern Ireland, Styria). Also at the local level, new policies have been developed with clustering objectives (Thomas & Shutt, 1996). While the last section has provided some general justifications for adopting cluster policies, this section will discuss in more detail what cluster policies may entail and how they differ from previous approaches. The main dimensions relate to the shifting overall approach to industrial policy; the role of sector policies and the attraction of FDI, and the trend towards networking and
partnerships. The final part of the section will address an complex issue in which more theoretical and practical aspects of cluster-based policy are confronted with each other, that of industrial targeting.

Changing conditions of regional industrial policy making

One reason for the popularity of the cluster concept at the subnational rather than the national level is the difference in economic policy perspectives adopted at the both levels. Embracing the cluster concept by subnational authorities can be seen as an attempt to fill the gap left by the ‘hands-off’ stance by central government. In particular this seems to be case in Germany, the US (Sternberg, 1991) and the UK (Geddes, 1992). In the case of the latter, it was the shift towards conservative politics in 1979 that brought an end to the planned industrial policy and led to the dismantling of the sectoral organisations of the Department of Industry and Trade. However, the absence of a national strategy and vision on industrial development did not mean that the state did not steer industrial development (Cowling and Sugden, 1993). The large-scale privatisation, with the emergence of new regulatory environment, and the support to foreign investments for instance were two developments with a significant impact on the recent evolution of UK industry. What is important though is that the strongly ideological position of the Conservative government against ‘state intervention’ also had a strong impact on local (more Labour oriented) government. Increased control by central government over local authority finances led to the curtailing of resources for economic policy and thereby forcing local authorities to search for other sources of funding, such as Europe, and to engage in partnerships with local business.

In the development of local industrial policy and business support, cluster initiatives have generally emerged from sector or technology-oriented policies. In Emilia-Romagna, a general shift can be observed from a policy largely organised along sectoral lines to a more horizontal, inter-sectoral focus (Gómez Uranga & Ozerin, 1997). In some cases, the emphasis on clusters has often been triggered by a general feeling of disappointment with previous supply-side oriented measures targeted on infrastructure and technology support. In particular, most of the technology parks and technology transfer centres which had been established on a large scale in the 1980s and early 1990s did not match the high expectations their role models had created (Hassink, 1996). Innovation strategies that were adopted in peripheral regions did not produce the kind of take-off that had happened with hi-tech sectors in core regions. Many of the initiatives were, to use the words of Cooke (1995): “too little, too late”. Cluster strategies were also seen by some as preferable to the kind of place marketing measures and subsidies used to attract foreign investments. While the latter may easily turn into wasteful negative-sum bidding games between rival authorities, cluster initiatives are regarded as growth creating. In the words of Sternberg (1991), cluster policies constitute a real alternative to the local economic developer’s typical preoccupation with such zero-sum policies.

Several aspects of regional policy development can be mentioned which have promoted a clustering approach. Most significantly, clustering provides a link between policies focused on SMEs and those focused on inward investment, thus bridging the indigenous and exogenous components of economic growth. One common aim of
cluster initiatives is to bring different types of firms and organisations together around one supply chain or one common resource or technology, thus improving economic integration as well as fostering communication and the transfer of knowledge between firms. Bridging the policies targeted on indigenous and externally owned firms is not only considered a step towards a more integrative development model that may overcome informational and government failures as well as reducing institutional mismatches, it is also seen as a way to overcome existing deficiencies in the two separate strands of regional development policy. In particular in the case of peripheral regions, SME-oriented policies have tended to be overshadowed, in interest as well as resources, by the efforts made to capture foreign investments. The latter, in turn, has been strongly oriented towards attracting investments, while paying less attention to the process of embedding established plants in the local economy. Because of its capacity to combine different sets of actors and bind different strands of policies and approaches, cluster approaches may support what Storper (1996) has called the emergence of more heterodox policy frameworks.

By encouraging a process of networking, clustering facilitates an environment in which firms can learn from each other rather than from support organisations. One of the crucial problems which small firms in particular face is that they lack the knowledge and information channels to identify their demands for business support. One of the problems of the business support sector has been that while they have generally been able to offer a standard package for upgrading business practices, they lacked the industrial and business-specific knowledge which could help firms to identify and be aware of their more specific needs. For this reason, although they have played a vital role in assisting business start-ups, business support agencies have often lacked the credibility required for a stronger involvement of the established local business sector (Morgan, 1996). Clustering, by involving SMEs, larger firms, and support organisations, is seen as a way to establish constant interaction between demand and supply. Clustering can thus both foster inter-firm learning, in which the more experienced firms can become the tutors of SMEs, as well as improving the interaction between business support agencies and their clients. Not surprisingly, many of the cluster initiatives have been developed in regions with a background of industrial decline or crisis. Such a context has been instrumental in motivating both the public and business sector in searching for novel ways to overcome pressing problems, to create trust, and to facilitate access to funding. In particular, regions benefiting from Objective Two funding under the EU Structural Funds have shown a high propensity to develop novel initiatives with the financial assistance from the EU. The more interventionist measures are then also justified because they were aimed at preventing business failures and job losses.

An important issue is to what extent clustering can be seen as part of a process of institution building. In general, clusters have been initiated by the establishment of various kinds of forums, as regular meetings of the firms and organisations related to a particular industry or value chain, mostly in the form of public-private partnerships. Over time, such forums can become more established organisations, and even turn into a kind of association (Waits, 1992). The latter may be particularly important in regions which have generally lacked a strong ‘meso-level’ of economic governance between state and the business sector. In regions with already a strong presence of business associations, Chambers of Commerce etc., clustering may contribute to the
building of more strategic links between organisations and businesses. The latter motive has for instance been mentioned in the case of cluster initiative in Germany (Rehfeld 1995). Many of these initiatives have been supported through the promotion of private-public partnerships by national governments and the European Commission.

**Industrial targeting: justified intervention?**

The concepts of networking, and the creation of forums around cluster-building portray an image of clustering largely as a bottom-up process, in which the main task of the policy-maker is to facilitate the networking process, to play, to use the words of Morgan, the ‘innovative interlocutor’. From the perspective of business development and institution building, this is generally seen as the most suitable approach, which builds on the tradition of business oriented policies. However, from a regional development perspective, there is also a structural dimension to clustering. Following Porter’s analysis of ‘cluster maps’, clusters present a way to depict the strengths and weakness of the regional economy, and have thus induced a revival of structural regional policy. Various regions have embarked on developing a cluster strategy, based on an analysis of the competitiveness of the existing economy and an identification of threats and opportunities in particular industries. To a large extent these approaches are focused on traditional sectors, although might include an examination of crosscut sectors from a cluster perspective. The analyses, often carried out by consultants such as Porter’s company Monitor, are based on a combination of established statistical methods, such as employment and production data analysis, ‘shift and share’, input-output analysis, and the use of technology indicators, combined with the capturing of qualitative information from industry representatives and experts about perceived strengths and weaknesses. They thus present a kind of cluster-oriented ‘SWOT’ analysis of the region, which serves to build a strategy of industrial targeting.

As a response to the trend towards sector or cluster targeting, it should be noted that various academic observers as well as policy-makers have expressed doubts about what is seen as a return to an interventionist, top down approach in regional policy (Rosenfeld, 1997). A critical question seems to be to what extent targeting represents an on-going process rather than a ‘one-off’ definition of the preferred cluster map. A related issue is the extent to which the formal cluster analysis is matched by a process of extensive consultation of local actors. Using the latter, cluster analysis may be used to create a collective vision of regional development which serves as a framework for initiating particular initiatives rather than as a step towards a top-down cluster policy. The most fundamental quandary however is to what extent governments can be seen as capable of understanding future economic developments in sufficient detail to justify the prioritisation of certain activities. On the one hand, the government failures in the domain of policy implementation may already have cast sufficient doubt over the endorsement of any form of more strategic government behaviour. On the other hand, the growth of new economic activities may be hampered by such intense systematic and market failures, that certain forms of targeting may be warranted (as for instance documented by Langlois and Robertson, 1995). Industrial targeting may thus be seen as a way to address the structural lock-in of a regional economy in a
unfavourable situation, for market forces cannot be expected to bring a prompt solution.

The role of regional development agencies in cluster approaches

Clustering initiatives, as shown so far, should be seen as an agenda that has emerged around concepts of networking, institution building and industry targeting, rather than as a well-defined set of policy measures. Thus rather than seeing intervention in terms of a specific form of mechanism, it is necessary to examine the process by which the role of state institutions has shifted to one of network facilitation and to examine the means by which they and other regional associations and actors interact.

At the regional scale, the cluster agenda has emerged from the contested nature of regional development policy since the early 1980s and the perceived weakness of traditional exogenous development strategies. With the slowdown in availability of FDI in the early 1980s and the rise of new paradigms of endogenous development many regions saw a fragmentation in policy between localised initiatives focused on SMEs, and the continued existence of inward investment agencies competing for a smaller share of mobile investments. The rationalisation of branch plants in recessionary periods undermined the role of FDI and the perception of its stability and embeddedness, but also presented considerable challenges for local agencies to compensate for the job losses (as shown for instance in the case of the withdrawal of the recently established plants of Siemens and Fujitsu in the North East of Britain).

Renewed investment opportunities in the late 1980s following recovery from recession and in the promise of the Single European Market, therefore presented regional and local agencies with opportunities to rethink the relationship between exogenous and endogenous strands of development. Fresh experiences of closures sharpened thinking about the sustainability of inward investments and shifted the emphasis of regional strategies away from just attraction towards retention, re-investment and maximising the local spin-offs. Rather than competing just on grants, agencies began to talk about building the ‘business case’ for the long term, and an emphasis on locally specific untraded interdependencies as factors in the competitiveness of plants within their companies as well as within their industry.

These moves have paralleled a changing role of the state in industrial policy which has been described by Kevin Morgan as a shift from ‘direct intervention’ to ‘indirect animation’ (Morgan, 1996). In this transition, the essential role of the state is being redefined as being an ‘animateur’, a facilitator of networking and institution building. Following this logic, the state should not try to take ownership of the cluster initiatives, but primarily work as a catalyst, as a broker that brings actors together and supplies initial funding for research and the initiation of the networking process. Knowledge is an essential component of this role as catalyst. Not only do local state organisations need to gain insight into the strengths and weaknesses of the regional economy at the industry and business-level, but also acquire an in-depth knowledge of the local institutional structure. Moreover, such knowledge acquisition should be part of an ongoing process of reflection and monitoring. One of the most difficult demands for the state is, while it aims at encouraging collective learning within its constituency,
it needs to become a learning organisation itself, following strict principles of how to act and when.

One way to organise this process is by assigning a strong role to an organisation that can act largely independently from the state bureaucracy, such as a regional development agency (RDA). While the state may retain the responsibility for monitoring the overall process, such an agency can be in charge of commissioning processes of research and consultation, of providing the support frameworks for bottom-up clustering, and of translating long-term strategies into short-term actions.

An essential task of an RDA is thus to invoke the support of other organisations, to act as a broker between business and actors such as research centres, education institutions, training providers, business associations, Chambers of Commerce, etc. This involves the complicated issue of how to create and monitor network-based forms of governance, which is essentially decentralised but requires some form of overall coordination. Batt (1994) advocates the creation of RDAs as the 'institutional expression of regional political networks'. As central moderators and facilitator, such agencies should act as a pivot in regional negotiation and mobilising networks to establish a cooperative and consensus based framework for industrial policy. RDAs should have the capacity to gather economic intelligence and create a platform for strategic thinking on regional development, engaging with the main partners involved in regional economic development through various forums, part of which could be cluster-based.

Analysing cluster-based policies: key points of evaluation.

An important aspect of cluster approaches in regional industrial policy relates to the role of political context. While cluster initiatives themselves aim at encouraging collaboration and at the creation of shared visions and strategies in the regional business sectors, they emerge from a political structure which itself shows a trend towards governance forms based on networking and partnerships. In understanding the role and impact of cluster development, the interaction between networking processes in and between the political and industrial systems is of vital importance. Such political considerations can be seen in the various stages of cluster policy development as outlined below.

Conception, and cluster mapping: Cluster initiatives have generally been developed against a particular background in which there was a need for new approaches. One incentive has been the search for follow-up policies after attracting foreign investment; another incentive the wish to promote the development and networking of SMEs. Cluster initiatives vary in the extent they are devised as top-down policies, generally based on a regional cluster analysis and mapping, or as bottom-up initiatives, linked to the support of particular groups of firms often by smaller business support organisations.

Objectives: Regional cluster policies generally pursue two sets of objectives. One is the support of business development through the creation of a favourable business environment, the tailoring and customising of pre-existing business support delivery, and, above all, the brokering of networks among businesses. The other is the improvement of the regional economic structure, through explicit or implicit forms of targeting. Whatever mix between these two levels is chosen, the cluster agenda should
address systematic and market failures observed in the regional economy, and take account of government failures showing up in existing forms of business support and technology policy. Because cluster policies rely on public-private interaction and often evolve around certain hubs, a critical issue is to what extent policies are manipulated by dominant economic or political players.

**Methodology:** Cluster policies generally involve two levels of organisation. The first level is that where cluster initiatives are conceived, facilitated and monitored. The central question at this level is how these processes are embedded in regional policy networks to secure sufficient interaction between relevant actors (public agencies, business representatives - including from SMEs, technology centres, universities etc.). The second level is that of particular cluster initiatives targeting a particular set of industries or businesses. At that level, the core issues are how networking process are brokered, how inter-organisational learning is facilitated, and how the business support sector and regional technology infrastructure is involved. The methodology chosen will also be of influence for the kind of businesses and organisation involved in cluster initiatives, and the extent to which these are representative for the wider value chains in which they operate.

**Evaluation and monitoring:** However important, evaluation poses great difficulties. The processes aimed for by regional cluster policies are not easy to measure, since they involve a gradual change in culture and routines of interaction rather than the yielding of concrete outputs. Strict monitoring systems may even be counter-productive, since they will force policy implementers to pursue certain targets (so many firms enlisted, so many contact hours, so many jobs ‘secured’, so many cases of technology transfer) which may not reflect the optimal way of network brokering and tailoring of support. While certain quantitative indicators may be highly useful, evaluation should be based on a flexible and reflexive observation of the unfolding of policy initiatives. A critical question is to what extent there is a learning loop, through which evaluation results feed back into the cluster strategy. Such loops should also ensure that policy measures are phased out, once the justification for intervention disappears, that is, once systematic failures have been adequately addressed. Evaluation should also trace the final destination of expenditure and consequences of support assisted by the cluster measures. Since the initiatives generally only assist business development in an indirect way, the final impact of support may be concealed. Networking among firms may be geared to improve learning processes along the supply chain, for instance, to the benefit of local SMEs; it may also be used for brokering trade relations between selected local firms to the exclusion and disadvantage of other, potentially more efficient, businesses. This kind of assessment will generally be more useful than counting heads in network meetings.

A related issue is that of funding. Obviously, proper financial accountability is essential, also to prevent abuse through the redirection of resources via the networking processes. A problem is that many cluster initiatives are funded on the basis of short-term projects requiring regular applications for financial support and thus quick proofs of success. However, most cluster initiatives will only show real benefits in the long term, and may thus be more effective if they are funded on a stable financial basis which does not require frequent re-applications. It should also be noted that cluster
initiatives, since they do not involve direct business subsidies or the establishment of technology parks or centres, are generally cheap forms of regional policy.

**Clustering in UK regions: case studies**

**Introduction to cluster policies in the UK**

Following on from the review of theoretical and political aspects of cluster policies, this section will examine the re-orientation of industrial policy in the UK, and specifically the emergence of cluster strategies at the regional scale. Central to this process of change has been the erosion of national level sectoral policies and a re-emergence around a cluster concept. Although the UK had pursued national sectoral strategies during the 1970s, during the 1980s the central government moved away from such initiatives, with the dismantling of sectoral teams within the Department of Trade and Industry, and a shift in R&D programmes towards collaboration in generic technologies. This left the regions and notably the smaller ‘nations’¹ of the UK (Scotland and Wales) as the main scale at which some sectoral strategies were continued. However, more recently there has been in some ways a return to a sectoral or cluster perspective in technology policy through the so-called Foresight programme. Within a strong competitiveness perspective, Foresight brought together actors in certain industries or on certain themes, such as chemicals, IT or leisure and learning to identify structural weakness and create new development strategies (see table 2).

**Table 2: Sector Panels in the Technology Foresight Programme (1995)**

<table>
<thead>
<tr>
<th>Agriculture, Natural Resources &amp; Environment</th>
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<tbody>
<tr>
<td>Chemicals</td>
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<td>Communications</td>
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<td>Construction</td>
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<td>Defence and Aerospace</td>
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<td>Energy</td>
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<td>Financial Services</td>
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<td>Food &amp; Drink</td>
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<td>Health &amp; Life Sciences</td>
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<td>Information Technology &amp; Electronics</td>
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<td>Leisure &amp; Learning</td>
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<td>Manufacturing, Production and Business Processes</td>
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<td>Materials</td>
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<td>Retail &amp; Distribution</td>
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<td>Transport</td>
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¹ The UK has a varied institutional composition and so the term region has varied meanings. Scotland and Wales are classed as nations, united with England within the UK, and so are not usually referred to as regions, especially given current devolution trends. Northern Ireland also had special status with its own parliament until the 1970s, now being reintroduced, although NI is usually termed a province in reflection of a colonial status. The term region is usually reserved for the English regions which are mainly of a similar population scale to Scotland. Further confusion arises from the existence until recently of a tier of local government in Scotland known as ‘Regional Councils’.
Although some sectoral or cluster oriented approaches have begun to develop nationally through Foresight, even within this programme some regional level organisations have played a key role, notably in electronics. This analysis will therefore focus on this regional scale. However before examining the specific cases of the regions, some understanding of the nature of governance of the regions is required.

Regional governance in the UK

The governance of economic development at a regional level in the UK is very complex and varied, and in many cases does not approach the ideal of a decentralised yet co-ordinated, representative yet proactive governance system. The most powerful actors, apart from central government, are regional development agencies (RDAs) in Scotland, Wales and Northern Ireland, but such organisations do not yet exist in England. Various authors have sketched the history of RDAs in the UK, and the details of these histories will not be repeated here (see Danson, 1992). While the origin and range of responsibilities of the RDAs is rather different, they have tended to concentrate on foreign investment as a core element of their economic development strategies. However, their other responsibilities range from physical regeneration (including housing in some circumstances in Scotland), to community development, indigenous business development including venture capital, and training. In England, on the other hand, there is a more complex melange of Training and Enterprise Councils (TECs), local authority bodies, and varying forms of publicly funded agencies with specific remits, such as property development, land regeneration and inward investment (Regional Development Organisations, RDOs). Even in Scotland, Wales and Northern Ireland the nature and governance of development agencies varies greatly, and there remain other sub-regional actors such as local authorities, and, in the case of Wales, TECs.

In each territorial unit the RDA is accountable to the local representation of central government, respectively the Welsh Office, the Scottish Office, and the Northern Ireland Office; in England the more focused regional development organisations are accountable to the regional Government Offices. The relationship between central government and the RDAs has been a crucial determinant in the development and performance of the RDAs. Under the Conservatives in the 1980s, for instance, RDAs were compelled to become facilitating rather than interventionist, while they were also forced to seek funding from other sources.

Another result of changes in the organisation of local government is that RDAs/RDOs were confronted with the establishment of semi-independent Training and Enterprise Councils (TECs) formed from the break-up of a government training agency, and new one-stop shop business support agencies (Business Links), controlled by a board of local business representatives but funded by the central state. The exception is

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2 Development agencies in Scotland etc. are still termed RDAs here for convenience. In England RDAs are currently being established and will be operational early in 1999. These will follow a different model to the existing RDAs and in the first instance will network together a number of existing regional scale bodies concerned with inward investment, land and property development and probably skills development.
Scotland, where the Scottish Development Agency (SDA, forerunner of Scottish Enterprise) and government training agency were integrated in one network, Scottish Enterprise Network, with local delivery agencies, Local Enterprise Companies (LECs). In the Welsh case, the structure of the WDA has been changed radically by the shift from a theme-oriented to a geographical division (Figure 1). The decentralisation was seen as a way to bring the organisation closer to its customers, including a better integration with other local organisations, and to account for the territorial differences in the area.

The British RDAs/RDOs, accordingly, are caught between the regional arm of central government on the one hand, and a proliferation of local agencies on the other, some of which are also controlled by central government. In this context, they have been struggling to find the appropriate organisational structure and linkages to support their position as core actors in the shaping of regional industrial policy. With a lack of local democratic structures and a tendency of the different organisations often to compete on policy initiatives rather than to collaborate, however, it is not surprising that the RDAs/RDOs in Britain do not really match Batt’s (1994) model of the ‘institutional expression of regional political networks’. Local authorities have tended to become marginalised in the development, and even implementation of regional industrial policies, which has encouraged some authorities to develop their own local initiatives with help of European funding. Unions have also had little representation in the bodies of regional policy making. On the other hand central government offices have considerable influence, whether as in the case of the Scottish and Welsh Offices which fund their respective agencies, or the government offices in the English regions which monitor RDOs.

One additional reason may be mentioned why RDAs have not reached the level of transparency, local openness and engagement which would make them more accountable and support their role as ‘local animateurs’. Because they have developed largely by the game of winning foreign investment, an important hurdle that all RDAs need to overcome is that of managing their information flows. While some degree of secrecy is inevitable for organisations that deal with foreign investment and the creation of ‘regional competitiveness’, it seems that in the past attitudes were such that they tended to build barriers rather than encourage debate and consensus building. This applied to WDA in the early 90s (Morgan, 1994), and still is a problem in the case of and English RDO like the Northern Development Company (NDC). A part of the problem is that RDAs, rather than accepting a role as catalysts and brokers, were still tempted, as in the case of foreign investments acquisitions, to acquire full ownership and credit for the projects they were involved in. RDAs thus still face the challenge to become more transparent, and more accountable while retaining strategic power and effectiveness.

The following sections outline some of the cluster initiatives that have been developed in the regions discussed above, and which are summarised in Table 3 below.
<table>
<thead>
<tr>
<th>Region</th>
<th>Organisation</th>
<th>Cluster focus</th>
<th>Cluster methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>Scottish Enterprise</td>
<td>Information industries (electronics, software, multimedia), energy, food, textiles and tourism</td>
<td>Focus groups, co-ordinating policy initiatives along cluster lines (e.g. skills, technology)</td>
</tr>
<tr>
<td>Wales</td>
<td>Welsh Development Agency</td>
<td>Automotive sector, Consumer Electronic sector, Medical Devices and Diagnostics sector, Telecommunications Equipment sector.</td>
<td>Supply chain initiatives; links to centres of excellence</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>Northern Ireland Growth Challenge</td>
<td>Engineering, food processing, health technologies, software, textiles and apparel, tourism and leisure, tradable services</td>
<td></td>
</tr>
<tr>
<td>NE England</td>
<td>Northern Development Company: Real Service Centre</td>
<td>automotive, off-shore, food, electronics, business services</td>
<td>Varied top-down and bottom-up initiatives, but primarily agency-led.</td>
</tr>
</tbody>
</table>

Table 3 Sector/Cluster orientation in UK regions

Wales

Emergence of cluster policies

Like in all regions, cluster initiatives in the Welsh case have primarily emerged from the policies geared to attracting foreign investments. An important incentive to developing cluster initiatives has been the programmes developed around the ‘after-care’ for and embedding of foreign investors. The Welsh supplier programme ‘Source Wales’ has been described as one of the most effective policies in this field (Morgan, 1994). Inspired by Japanese supplier development approaches, Source Wales included the creation of supplier clubs in core manufacturing sectors (particularly automotive, initiated by Calsonic, electronics, and aerospace). The success of Source Wales is shown by the fact that the programme has largely become self-financing.

Another pillar of the Welsh approach are the support for local firms to build joint ventures with foreign firms (Global Link, the successor of Eurolink), which involves close links with the four partner regions which make up the ‘Four Motors’ group.

The core objective of clustering has been to establish forums with representatives from various interest groups, depending on the industries involved. Clusters primarily emerged out of the networking processes around supply chain initiatives. Most cluster forums are assemblies of representatives of large firms, SMEs, research organisations, TECs, local authorities, and local enterprise agencies. The main route to cluster development has been bottom up, in a highly customised fashion, with an important role assigned to more experienced agents, notably large firms. The motivations for clustering have varied widely (see Table 4). Only in a few cases has the WDA, more in a top-down fashion, identified industries to initiate new cluster. One such a case is the food sector, where the WDA saw a need for consolidation given the ongoing
trends towards rationalisation and spatial concentration in the sector. Other industries
have been targeted because they were perceived as presenting new growth
opportunities, such as multi-media, call centres, and financial services. Within the area
of attracting foreign investment, special teams have been formed with a sectoral focus.
This includes two core sectors: automotive, and electronics, and various ‘emerging’
activities: multimedia, medical, food, financial services, and call centres.

Parallel to the bottom-up cluster development, the WDA has developed a country­
wide sector development strategy, based on an analysis of the strengths and
weaknesses of the Welsh sectoral economy. The Sectoral Initiative Programme was
launched in 1990 (Table 4). This involved a selection of priority sectors where Wales
was seen as relatively strong and a set of emergent sectors where the WDA could play
a role in supporting growth. A more in-depth study was commissioned in 1996, which
resulted in a more elaborate typology which distinguished between inward investment
related targets, indigenous growth targets, industries in need of more defensive
strategies, and long-term priority sectors. The latter were identified on the basis of
supply chain gaps, opportunities arising from technological developments and new
infrastructures. While this type of economic intelligence has supported the
identification of new clusters, most of the established clusters are based on a ‘hands­
on’ approach, in which most information was obtained by direct and regular
communication between WDA officials and firms.

Recently clusters policies have become more oriented to indigenous development.
Although less than in Scotland, the WDA has had an interest in indigenous firm
development but this developed separately from the foreign investment policies. There
has been a shift to a more integrated approach, partly as a response to the
understanding that, with the competitive bidding game for foreign investments
becoming tougher, factors other than land and subsidies were required. Building
supply chains was seen as one route to promote the region, as well as to tie in existing
investors. In addition, with the development agendas increasingly stressing the need to
raise Welsh competitiveness by innovation and increased export capability, large firms
were increasingly seen as helpful for upgrading indigenous sectors. A recent initiative
in which bridging indigenous and foreign-owned sectors is seen as one important
objective is the Regional Technology Plan. (Morgan, 1997).

Cases of cluster policies

The industry in which WDA has had most success in creating new collaborative
structures and encourage networking is the automotive sector. It is this industry which
has played a major role in the building of the core strands of the WDA programme,
such as ‘Source Wales’, notably the supplier clubs, the Euro/Global Link initiative and
its involvement in the Four Motors group. The automotive forum has become an
important institution in the region, both from the perspective of policy-makers and
businesses. Membership is generally seen as imperative by firms in the automotive
sector, because of its emphasis on building locally integrated value chains and its
impact on regional development strategies.

Another industry where clustering has been important is electronics. However, here
two initiatives have been developed, one around foreign investors (particularly LG),
and another which draws on smaller firms. The first one is particularly geared towards developing a training strategy for the region, which has been motivated by the expectation that recent investments will enhance the problem of skill shortages in the region. The SME forum is also focused on skills. A separate group was set up because these firms fear that skills shortages will lead to poaching by the foreign investors.

These main cluster initiatives are essentially sector-based, although, especially in the automotive case, they work from a value-chain perspective. One of the few examples of an inter-industry linkages in Wales is the shown by the relationships between automotive and electronics. One industry that has particularly benefited from this relationship is machine tooling, in which about 70 firms are operating, many of them SMEs. The demand for machine tools has been induced by the large foreign firms in electronics and automotive with one example being the growth of Valenite-Modco. This firm has become a major supplier to Ford-Bridgend. At presently, the WDA is investigating further benefits from linking automotive and electronics; but this is the only cross-industry grouping which receives such attention.

A cluster which has been established primarily on the basis of indigenous businesses and actors is the Welsh Medical Technology Forum. This forum is strongly geared to creating innovative networks in the region, led by indigenous industries, local universities, public organisations and representatives from the National Health Service (NHS). The total number of Forum members exceeds the 500, and it has already led to the establishment of one centre for SMEs: the Medicentre in Cardiff (1994), which collaborates with the Welsh University College of Medicine and the University Hospital. Another ‘indigenous’ initiative is the Garment Industry initiative which has led to the build-up of a Garment Design Centre (1992). This Centre which offers computer-based services to local firms in a ‘real service’ style (Cooke 1992). This is however one of the few cases where a strong involvement of other actors (non-business, non-support) can be observed.

**Impact**

Wales has received considerable interest from researchers for its recent attempts to build new forms of public-private partnerships and the range of activities undertaken in the field of attracting and embedding foreign investments, clustering, and technology policies. What the impact of these initiatives has been on the socio-economic development of the region however remains a controversial issue. Evaluations have been primarily carried out in a case-by-case fashion, without a strong feedback on following support measures. Some authors see most development from a positive angle. Cooke (1997) argues that Wales has struck the right balance between attracting foreign investments and the building supply chains and other forms of embedding, thus preventing the emergence of industrial enclaves around foreign investors. The impact of foreign investments has even been seen as being vital for what is perceived as a ‘renaissance’ of the Welsh industry (Price et al., 1994). In this context, the creations of forums and partnerships are presented as good cases of institution building which is engendering the ‘filtering down’ of the benefit from foreign investments to other parts of the local economy.

This positive image has been refuted by Lovering (1996), who, on the basis of statistical evidence, observes little more than a ‘tiny regenerative contribution of foreign firms’. In particular, he attacks the vision of Wales catching up with regions
such as Baden-Württemberg. On the issue of embedding foreign investments he comments: “Wales has a few tiny, compromised and basically top-down measures designed to attract foreign firms, to encourage businesses to talk to each other, and to support minuscule innovation efforts. These are worthy in their own right, and might just make a modest contribution to particular firms or sectors in the very long term. But they are minuscule, uncoordinated, and lack economic resources and a political context” (15). While it remains to be seen how ‘tiny’ the impact of the WDA measures are in the long term, at present it is obvious that most initiatives do not reach very ‘deep’ into the Welsh economy, and are still geared towards the larger, more successful firms in the economy.

**Scottish Enterprise**

**Emergence of cluster policies**

Scotland has had a long tradition of sectoral support, notably in electronics where there has been a variety of institutions and strategies of various kinds since the 1950s. Foreign investments have driven most of these initiatives, although an early clustering strategy in the 1950s was based around Ferranti, a UK-owned defence contractor that was collaborating with local firms in developing new electronic technologies in a publicly-funded shared laboratory complex. However, with the growth of US investment in the 1960s and 1970s, followed by Far Eastern firms in the 1980s and 1990s, the emphasis has shifted to defending and embedding foreign owned firms within a Scottish electronics cluster.

Electronics is not the only sector to be the focus of support in Scotland, and there have been long-standing programmes for biotechnology, food and drink, textiles and clothing and others, but electronics has tended to be the most distinctive and perhaps most successful in terms of the external perception of Scotland as a world class centre for electronics manufacturing.

As noted earlier, inward investment and business development in Scotland has been led by the Scottish Development Agency, and now Scottish Enterprise. Most of SE’s activities are organised in theme-oriented divisions: exports, skills, etc., but some activities have been organised within sector divisions. The emphasis on indigenous development has grown over the years. One major programme launched by SE recently especially targets new firm formation (Business Birth Rate). Another programme, that of Technology Commercialisation, attempts to build an stronger indigenous technology base, by building bridges between universities and business, including both indigenous and foreign firms. In contrast to most other agencies in Britain, SE programmes generally benefit from a secure, medium- to long term funding basis.

In recent years, SE has embarked on a more systematic approach to cluster development. Within Scottish Enterprise Operations (SEO) cluster teams have been formed which currently deal with four major clusters: ‘Information Industries’ (which includes software, electronics, and manufacturing), energy (building on but now broader than oil), food & drink, and tourism, and two smaller clusters: biotechnology, and textiles. In addition, a number of emergent clusters have been identified, which so far have not been underpinned with a dedicated support team. These emergent clusters
are presently in different stages of cluster development: multi-media, value added engineering, financial and educational services, chemicals, and forest production. Finally, there is group of so-called ‘latent’ industries, for which no initiatives exist at the SE Network level although cluster teams may emerge at the local level. This includes defence, financial services, and chemicals. While different philosophies are applied in the initiatives, one common objective is to move from what are considered more interventionist sector policies to a position in which SE facilitates the creation of “knowledge based networks”. Involvement of other Scottish organisations is generally strong.

Cluster cases

A specific SE methodology has been developed to set up clusters, which is intended to lead to a cluster strategy over a period of approximately one year. As illustrated in Figure 3, the clustering initiatives are particularly targeted on identifying common needs in different fields of business support and economic development policy. One of the emerging clusters which was at the time of writing halfway through the process of consultation is multimedia. The more systematic approach followed by SE can partly be attributed to the fact that it asked Monitor to undertake an in-depth analysis of the Scottish economy, which included a detailed comparison of key industries, notably in electronics, with core regions in the US, on themes such as innovation, finance. The Monitor research was followed by a, perhaps more important, phase of consultation, resulting in a final cluster map and strategy which has been published very recently. Key criteria for the selection of clusters were: the weight and scale of the sectors, the possibility for SE to ‘make a difference’, the potential for the Scottish industry to be a winner, the urgency of intervention, and the opportunities for global exports. Undertaking in-depth analysis is seen as important by SE. With the right identification of problems and possible solutions, and the right ‘smart’ people on board, the design of a development strategy will be much more effective, both with respect to time and costs. It is too early to indicate the nature of the evaluation of cluster initiatives.

The electronics forums are most developed. - with different forums for general electronics manufacturing: opto-electronics, software and more recently multimedia. These forums link into a rich network of initiatives, co-ordinated by the Information industries group in Scottish Enterprise, some of which have spun off to become distinct companies. One example is SPEED, a logistics support and lobby organisation for the electronics sector which is supported by the major companies and SE, and has undertaken a number of initiatives to enhance the capability of firms to export from Scotland, to use electronic data interchange within the sector, and to build supply chain linkages and adopt industry-wide solutions to logistics problems.

Over the last few years, clusters have become a core concept in SE’s strategic and organisational development. The organisation now strives for becoming a more cross-sectoral and inter-disciplinary organisation inspired by the cluster concept. This means that also other policies, notably skill development and technology policies, have been linked to the cluster targeting approach. One recent example of such initiatives is the ‘Alba’ project, a skill development project developed around Cadence, a US-based semi-conductor design company. Since the Cadence plant, established in 1998, presents a high value added activity with a high skill profile, it is seen as vital hub for cluster development.
Northern Ireland

The situation in Northern Ireland is slightly different from Wales and Scotland, because of the way in which direct rule from London was imposed on a devolved parliament structure. Thus the Northern Ireland Office has a Department of Economic Development (DED), with specialist agencies such as the Industrial Development Board, the Industrial Research and Technology Unit, the Local Enterprise Development Unit etc. These units all undertake responsibilities equivalent to parts of SE/WDA, but co-ordinated by DED. Each also has a private sector led board. DED has traditionally had much greater control over institutional development than the Scottish Office and its Industry Department, dating back to the 1970s when a Northern Ireland parliament had a Minister for Industry.

The Northern Ireland growth Challenge (NIGC) is a private sector initiative by the Northern Ireland branch of the CBI, although it works in close operation with the Department of Economic Development (DED) of the Northern Ireland Office. The NIGC largely follows a top-down industry targeting vision based on a cluster approach. It is the only development strategy which refers to clusters as its main strategy, associated with the ambitious mission to make “Northern Ireland as the fastest growing region in Western Europe”. Key to this growth is building more dynamic, competitive clusters that drive continuous innovation, up-grading and learning. In essence, it is a vision of a return to Northern Ireland’s heritage of industrial leadership built on hard work, inventiveness and dynamic enterprise.” (NIGC Interim Summary 2). Although the aim of the initiative is to focus not on detailed analysis but private sector action, the strategy is based on an overall analysis of the regional economy which follows the standard sequence of identifying strengths and weakness and developing a cluster strategy which includes a cross-cluster dimension. The upgrading strategy is built around a set of common themes from the management literature: achieving world class standards, supply base development, skills development, and place-marketing. In addition, the role of networking between business, government, universities and other groups is emphasised to build consensus and new forms of interaction, as is the need to improve infrastructure and the environment. These themes have been integrated and specialised in the ‘cross-cluster programme’.

It doing so, the strategy is firmly based on a Porterian approach, which is not unexpected since most of the work was commissioned from Monitor. Porter’s influence can be seen in the way the NIGC repeatedly stresses the fact that the government, through its tradition of generously subsidising weak firms, has actually aggravated the core economic problems in a serious form of government failure, thus exacerbating the lack of competitiveness and a lack of an innovative, outward looking culture.

The clusters targeted by the NIGC are: Engineering, Food processing, health technologies, software, textiles and apparel, tourism, an leisure, tradable services and contracting. For each of these clusters, a range of initiatives has been developed in collaboration with private and public organisations.
England

In England strategic economic development policy at a regional scale, particularly for inward investment and sectoral development, has been left subject to the emergence of regional development organisations established by local authorities and other partners, with some funding from central government. These bodies tend to be non-profit companies established without statutory powers or formal relationship with government. In the North East, NDC emerged from a joint initiative of various local and national organisations (trade unions, business federation, local authorities and the Invest in Britain Bureau), building on an earlier organisation, NEDC, which fulfilled a similar function and was Invest in Britain (IBB) funded. Whilst these organisations (others exist such as INWARD in the North West) have had government support for their inward investment role (mainly for marketing activities), where they have been eligible for European funds, or other non-FDI related UK support, they have been able to expand into other forms of activity such as investor aftercare, supply chain work and cluster strategies. NDC is following its neighbouring agencies by moving towards a more sector-based structure.

In other English regions, the history of sector initiatives and the emergence of partnership-based governance networks have been important factors in the development of network-oriented local industrial policy. In the late 70s and early 80s, industrial decline in manufacturing sectors triggered the development of sectoral policies at the local level. Some of the larger councils, such as the later abolished Greater London Council, undertook comprehensive sectoral studies as a basis for local industrial policy (Haughton & Thomas, 1992). The political changes in the 1980s led to a less analytical, more instrumental approach focused on single sectors, primarily focused at SMEs. In particular organisations like the TECs encouraged higher levels of user engagement and an elaboration of specific areas, such as training, supply chain development and accreditation. Such initiatives were largely driven by funding conditions and not part of larger strategic plans. In general, no link was established between local sector-oriented initiatives and inward investment strategies, as followed by NDC and INWARD. The latter evolved as purely focused on inducing ‘a quick injection of jobs’ by simple means of place marketing and competitive bidding for investment opportunities.

Cluster initiatives in England largely emerged out of sectoral policies which were inspired by the ‘industrial district’ model. They evolved either in conjunction with spatial policies, such as the cultural district in Sheffield, seen as one of the few successful cases of an ‘industrial district’ creation. Or they were inspired on models of inter-firm networking and resulted in initiatives to bring small numbers of firms together in business clusters (Shutt & Pellow, 1997). An example of the latter is the support of the North Tyneside Real Service Centre - its name being a clear reference its Italian inspiration - to the development of five business clusters consisting of between 5 and 10 firms, in sectors ranging from offshore and software production to consultancy and design activities. There are also examples of partnership models being applied to local sectors, such in the case of Leeds. From the four sectoral organisations which emerged so far one, the financial cluster, has become self-sustained (Thomas & Shutt, 1996). Another example of a partnership model is the ‘World Class Supplier Base’ Programme for automotive supplier in the West
Midlands, which has taken on a ‘hub and cluster’ model. This initiatives, which has grown out of supply chain programmes of the national Department for Trade and Industry (DTI), is backed by a coalition of Chambers of Commerce, Universities, TECs, and Industry Centres.

What is lacking in these and similar cases, however, is the embedding of the local, bottom-up initiatives in a wider perspective on local or regional development. The initiatives primarily present isolated projects driven by particular agents and supported under particular sources of funding at a local scale. One of the problems in England is that, with the exception of London and the North East, there is no well-developed regional structure on which more comprehensive development strategies could be built.

An important factor in the emergence of cluster policies by a number of regional and local actors in North East England has been the European Structural Funds, and the insertion of an action line on clusters of competitive advantage within the Single Programming Document for 1994-96. This has stimulated a number of new projects and initiatives with a broad cluster approach, and led to greater debate within the region about the merits of a sectoral or cluster approach.

One sector where a cluster approach is currently emerging in the North East, following the examples of Scotland and Wales, is electronics. Over the years the numbers of electronics firms in the region has ebbed and flowed, with NDC taking an opportunistic approach rather than the more targeted approach of Scotland. The core of the industry in the region has been consumer goods manufacturing (mainly Asian in origin in recent years) with a more traditional components industry which is of UK and mixed foreign ownership. A key departure however has been the arrival of first a Fujitsu and then a Siemens semiconductor plant. In both cases the local universities have been very active in developing new training courses but this has only been a first stage of a wider local response. The Siemens investment in North Shields coincided with the development of a research and training facility: the Centre for Advanced Industries. The character of this centre was transformed when Applied Materials, the supplier of much of the semiconductor manufacturing equipment to Siemens, decided to establish a European training centre there. This has been followed by an aspirational strategy to enhance and develop the electronics sector with the establishment of the North East Microelectronics Centre, a forum for the industry based on training needs, and involvement in the new National Microelectronics Institute which is based in Scotland. Over the last few years, a new sectoral strategy has been developed, led by the NDC which has itself responded to the region’s aspirations in establishing an electronics ‘division’. Obviously, the recent announcements that both Siemens and Fujitsu will pull out from the region will have serious consequences for the continuation of this policy.

At the local level, bottom-up initiatives have emerged aimed at promoting indigenous development, particularly of SMEs, by facilitating and supporting business clusters. This generally involves the joining of between five and ten firms under the umbrella of a formal cluster organisation, in which firms exchange experiences, share resources, and develop common strategies in areas such as product development, marketing, and training. Besides the support for the development of local industrial networks, such business clusters may contribute in several ways to local economic
development and policy. Business clusters present an environment through which SMEs can identify and express their needs for business support and can have stronger voice in local industrial policy making. They also may present a more effective and sustainable way of building relationships between the business support sector and SMEs. Finally, at the local level such clusters present a vehicle for authorities to support or launch the development of a particular economic activity.

One case of support of business clustering is offered by the North Tyneside Real Service Centre (RSC), operating in the area east of Newcastle upon Tyne. The RSC is a spin-off from the Council’s economic development department. With the assistance of ERDF funding, the RSC was set up in 1994 to develop and implement a local cluster strategy. The first two clusters developed were Argonautics (marine engineering) and Pegasus (consultancy to the pipeline industry). In both cases, the initiatives responded to a crisis situation in which the council was facing a loss of innovative capability in the area. Argonautics was set up to retain some of the marine engineering capacity after the bankruptcy of the last shipyard (Swan Hunters). Pegasus was developed to retain some of the expertise in pipeline fabrication and testing after the closure of the British Gas Engineering Research Station at Killingworth which employed around 500 people. The Pegasus cluster has been particularly successful in creating new business by preserving some regional expertise in the area of pipeline design and maintenance. Over the last two years, its six member firms have been able to develop new expertise (notably in pipeline rehabilitation) and to access new markets abroad through an aggressive cluster marketing strategy. After Pegasus, the RSC has initiated cluster development in the areas of design communications, software, and management systems. In all these cases, networks have been formed between previously isolated SMEs through which, collectively, new market positions have been acquired. The RSC has developed an advanced monitoring system and reporting structure which is especially geared to justify the continuation of its (generally short-term) funding.

5. Conclusion

Clustering has become a popular concept in the domain of regional policy making, underpinning new initiatives geared to facilitating networking processes along (inter)sectoral and value chain lines. Cluster policies can be seen an innovative step in regional policy making, not only because of the emphasis on networking, but also because it may build a crucial bridge between two levels of regional economic development:

(1) the business level, where cluster initiatives may promote inter-firm trading and inter-firm learning (in many cases, the latter may arguably more important than the former) as well as improving links between business and the regional technology and business support infrastructure.

(2) the structural level of the regional economy, where cluster policies, through a strategy of targeting, may support the reorientation of regional economic development towards growth sectors.

A number of theoretical arguments can be put forwards why policy interventions targeting these two levels may be justified. First, intermediate markets in regional economies, notably small firms in more traditional sectors, may suffer from
informational failures, and cluster policy may thus be geared to breaking business isolation and facilitating the co-ordination of modernisation and investment strategies between related industries. Second, the regional economy may be locked into an unfavourable economic structure and thus needs initial triggers to develop new sources of growth and employment creation. Growth may be triggered for instance around certain hubs, such as foreign investors or a university, through a cluster approach. Third, past experiences with business support have shown a worrying level of mismatch between supply and demand. Through developing new types of interaction between support agencies and their (potential) clients along cluster lines, occurrences of government failure may be reduced and the effectiveness of existing support mechanisms enhanced. Fourth and final, clustering may be used to improve the interaction between the regional institutional system at large, by offering a platform for discourse on business development as well as the long-term economic development of a region. This may be expected to reduce institutional mismatches.

The last dimension bears directly on the issue of regional innovation systems. Particularly in the case of more peripheral areas, it is essential to see these systems not as a kind of autonomous entities that are important for knowledge production. Rather, regional innovation systems should be associated with a coherent institutional structure facilitating and directing processes of learning in a region. In peripheral regions, virtually all sources of learning can be expected to be external, and a crucial role may be played by knowledge hubs represented by large externally owned firms, universities, training colleges, etc. The innovation system, therefore, should be guided to steering the process of institutional linking and useful forms of knowledge transfer. In this perspective, clustering provides a concept providing strategic direction and, in particular, connections to groups of actors already linked through supply chains or other inter-firm relations. It is in these particular contexts, that an open-ended concept of regional innovation system will benefit cluster developments and vice versa.

While the discussion has highlighted the potential benefits from cluster policies, this should be contrasted with the practical implementation of cluster policies. The case studies presented here show the difficulties in assessing the justifiability of initiatives, in measuring outputs, and in finding the right approach to funding. Learning at the levels of the policies themselves still seems to be poorly developed. Moreover, while targeting features in most approaches, this remains a controversial issue for public intervention. In all peripheral regions, the case for exploring and triggering new directions of development is easily made; however, how business opportunities that can be ‘unlocked’ by policy initiatives should be identified and monitored remains an open question. One worry may be that, especially in regions dominated by foreign investors, clustering will improve the interaction between foreign firms and parts of the indigenous sector in a region, but through a process of ‘picking winners’ rather than a more widespread modernisation of local SMEs. There remain, accordingly, a number of critical issues that should receive further attention while advancing cluster approaches in regional policy making: for instance, who will be involved in strategy development (question of representation and dominance), how the strategy will be implemented (relation between bottom-up and top-down) and funded (tension between short-term nature of project funding and long-term results, which industries will be targeted, and how the clustering process will be governed and evaluated.
Acknowledgements The authors would like to thank the WDA, SE, and various agencies in North East England for their assistance in this study. We also Prof. Kevin Morgan from the University of Wales for his good advice on the Welsh case.
Table 4 Wales – cluster and sector strategies, 1990 initiative and actual state

1990 Welsh Sector Initiative: four priority categories

Cat. 1 Information Technology, financial services, R&D - sectors are fully resource initiatives with a dedicated team and a full time sector manager.

Cat. 2 Automotive, aerospace, medical/health – sectors where a range of activities have already developed and which have the potential to impact upon a substantial number of companies both in Wales and for inward investment targeting

Cat. 3 Chemicals, garments, furniture, craft, packaging – sectors where activities are already underway but the levels of resources is likely to remain limited

Cat. 4 Environment, energy, media – sectors in which research is underway to identify the needs of a sectoral approach

Actual cluster forums and description of core targets/motivation

1. Automotive strong self-sustained cluster, targeted on supply chain development, increasing exports, training.

2. Electronics core growth sector: supply chain development, technological development, training

3. Opto-electronics mainly in W-Wales: new technology sector

4. Medical is more research oriented

5. Multimedia indigenous development, built around 3 TV companies in Cardiff;

6. Call centres: short-term target sector

7. Pharmaceuticals

8. Aerospace – creating global links

9. Renewable energy possible emergent cluster where people have been introduced to each other.

10. Machine tooling industry which benefits from the growth of and growing interaction between the automotive and electronics sector.

Source: WDA (documentation, interview)
The Centralised Structure

Chief Executive

Marketing  Business Services  Rural Development  Development Projects  Property  Corporate Services

The Decentralised Structure

Chief Executive

International Division  North Wales Division  West Wales Division  South Wales Division  Finance

Figure 1. Changes in the Welsh Development Agency
Figure 2 Scottish Enterprise organisational structure

*note:* in bold = separate organisations with own governance structure
others = divisions dependent on Scottish Enterprise National
Figure 3 Scottish Enterprise cluster approach
References


